

OK for entry 1/5/05

IN THE CLAIMS:

Claims 2-4, 6-25, 27-29 and 31-50 were previously cancelled. Claims 1, 5, 26 and 30 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Currently amended) A method of forming a wire bond-style/~~flip-chip attach~~ style/flip-chip attachment assembly electrically connecting a semiconductor die having a bond pad pattern to a first substrate having a connector pattern arrangement when ~~said the~~ semiconductor die is attached to second-~~adapter~~ adaptor substrate having an upper surface and having a second surface having a connector pattern thereon, comprising:

providing an inverted bare semiconductor die having a surface having a plurality of bond pads extending along a longitudinal axis of ~~said the~~ semiconductor die on ~~said the~~ surface in a first bond pad pattern different than the connector pattern arrangement of the first substrate;

providing a second-~~adapter~~ adaptor substrate having a die side surface, a second attachment surface, at least one via extending through the second-~~adapter~~ adaptor substrate from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface having a connector pattern connected to the plurality of circuits matching the connector pattern arrangement of the first substrate and a plurality of bond pads located in a first bond pad pattern connected to the plurality of circuits matching the first bond pad pattern of the inverted bare semiconductor die;

applying an adhesive to a portion of the die side of the second-~~adapter~~ adaptor substrate to attach the inverted bare semiconductor die thereto;

attaching a portion of the surface having a plurality of bond pads thereon of the inverted bare semiconductor die to a portion of the die side surface of ~~said the~~ second substrate locating the bare semiconductor die above the second ~~adapter~~ adaptor substrate having the bond pads of the semiconductor die located over the via in the second ~~adapter~~ adaptor substrate;

connecting ~~said the~~ plurality of bond pads of the inverted bare semiconductor die to ~~said the~~ plurality of bond pads on the second attachment surface of ~~said the~~ second ~~adapter~~ adaptor substrate using a plurality of wire bonds, ~~said the~~ plurality of wire bonds extending through ~~said the~~ at least one via extending from bond pads of the inverted bare semiconductor die located on the die side surface of the second ~~adapter~~ adaptor substrate through ~~said the~~ second ~~adapter~~ adaptor substrate to the second attachment surface of the second ~~adapter~~ adaptor substrate, the plurality of wire bonds connected to the first bond pad pattern of the bare inverted semiconductor die and to the matching first bond pad pattern on the second attachment surface of the second ~~adapter~~ adaptor substrate;

filling at least a portion of the via in the substrate with a sealant; and

connecting ~~said the~~ second ~~adapter~~ adaptor substrate to ~~said the~~ first substrate having ~~said the~~ second substrate located solely on one side of ~~said the~~ first substrate, the connections between ~~said the~~ first substrate and ~~said adapter~~ the adaptor second substrate formed by a plurality of ~~adapter~~ adaptor board connectors extending between the matching connector pattern on the second attachment surface of the second ~~adapter~~ adaptor substrate to the connector arrangement of the first substrate.

2.-4. (Cancelled)

5. (Currently amended) A method of forming a wire bond ~~style/flip-chip attach~~ style/flip-chip attachment assembly electrically connecting a semiconductor die having a first bond pad pattern to a master board having a connector pattern arrangement, comprising:

providing an inverted bare semiconductor die having a plurality of bond pads located in at least two rows extending down the longitudinal axis of ~~the inverted-the bare- bare~~ semiconductor die thereon, ~~the-at least two rows-~~ plurality of bond pads located in the at least two rows having a first bond pad pattern;

providing a master board having a plurality of circuit traces on an upper surface thereof connected to a plurality of connectors in a second connector pattern arrangement located thereon different than the first bond pad pattern of the plurality of bond pads of the inverted bare semiconductor die;

providing an ~~adapter-~~ adaptor board having a die side surface, a second attachment surface, a via extending through the ~~adapter-~~ adaptor board from the die side surface to the second attachment surface, a plurality of circuits, a plurality of bond pads located on the second attachment surface of the ~~adapter-~~ adaptor board having a plurality of bond pads connected to the plurality of circuits matching the first bond pad pattern of the plurality of bond pads of the inverted bare semiconductor die, and having a connector pattern connected to the plurality of circuits matching the connector pattern arrangement of the plurality of connectors of the master board;

providing a plurality of electrical connectors for connecting the connector pattern connected to the plurality of circuits matching the connector pattern arrangement of the plurality of connectors of the master board located on the second attachment surface of the ~~adapter-~~ adaptor board to the plurality of connectors in a second connector pattern arrangement of the circuit traces of the master board;

attaching a portion of ~~said- the~~ inverted bare semiconductor die to a portion of the die side surface of the ~~adapter-~~ adaptor board;

connecting ~~said- the~~ plurality of bond pads of ~~said- the~~ inverted bare semiconductor die to ~~said- the~~ plurality of bond pads of the ~~adapter-~~ adaptor board using a plurality of wire bonds,

~~said the~~ plurality of wire bonds extending through the via extending through the ~~adapter~~ adaptor board having a portion thereof attached to the plurality of bond pads on the second attachment surface of the ~~adapter~~ adaptor board and having a portion thereof attached to the plurality of bond pads on the bare semiconductor die; and connecting ~~said adapter~~ the adaptor board and master board using ~~said the~~ plurality of electrical connectors on ~~said adapter~~ the adaptor board to ~~said the~~ plurality of circuit traces on ~~said the~~ master board using the plurality of electrical connectors.

6.-25. (Cancelled)

26. (Currently amended) A method of forming a wire bond ~~style/flip-chip attach~~ style/flip-chip attachment assembly attaching a semiconductor die having a first bond pad pattern to a first substrate having a connector pattern arrangement for attaching ~~said the~~ first substrate to a second ~~adapter~~ adaptor substrate having an upper surface and having a second surface having a connector pattern thereon and having a plurality of circuit traces thereon, comprising:

providing an inverted bare semiconductor die having a surface having a plurality of bond pads located along a longitudinal axis of ~~said the~~ the inverted bare semiconductor die on ~~said the~~ surface extending in a leads-over configuration on ~~said the~~ surface, the plurality of bond pads having a first bond pad pattern different than the connector pattern arrangement of the first substrate;

providing a second ~~adapter~~ adaptor substrate having a die side surface, a second attachment surface, at least one via extending through ~~the~~ a board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the second ~~adapter~~ adaptor substrate having a connector pattern thereon connected to the plurality of circuits matching the connector pattern arrangement of the first substrate and a plurality of bond pads connected to the plurality of circuits in a bond pad pattern matching the first bond pad pattern of the inverted bare semiconductor die;

applying an adhesive to a portion of the die side of the second ~~adapter~~ adaptor substrate to attach the inverted bare semiconductor die thereto;
attaching a portion of the surface having a plurality of bond pads thereon of the bare semiconductor die to a portion of the die side surface of ~~said~~ the second substrate;
connecting ~~said~~ the plurality of bond pads of the inverted bare semiconductor die to ~~said~~ the plurality of bond pads of ~~said~~ the second ~~adapter~~ adaptor substrate using a plurality of bond wires, ~~said~~ the plurality of bond wires extending through ~~said~~ the at least one via extending through ~~said~~ the second ~~adapter~~ adaptor substrate, the plurality of bond wires connected to the first bond pad pattern of the plurality of bond pads of the inverted semiconductor die and to the matching first bond pad pattern of the plurality of bond pads on the second attachment surface of the second ~~adapter~~ adaptor substrate; and
attaching ~~said~~ the first substrate to ~~said~~ the second attachment surface of ~~said~~ the second ~~adapter~~ adaptor substrate using a plurality of ~~adapter~~ adaptor board connectors extending from the second attachment surface of the second ~~adapter~~ adaptor substrate.

27.-29. (Cancelled)

30. (Currently amended) A method of forming a wire bond ~~style/flip-chip attach~~ style/flip-chip attachment assembly attaching a semiconductor die to a master board, comprising:
providing an inverted bare semiconductor die having a plurality of bond pads in at least two rows having a first bond pad arrangement located down the longitudinal axis of a surface of the inverted bare semiconductor die in a leads over chip configuration;
providing a master board having a plurality of circuit traces on an upper surface thereof connected to a plurality of connectors in a connector pattern arrangement located thereon, ~~said~~ the upper surface for the receipt of an ~~adapter~~ adaptor board therein;
providing an ~~adapter~~ adaptor board having a die side surface, a second attachment surface, at least one via extending through the ~~adapter~~ adaptor board from the die side surface to the second attachment surface, a plurality of circuits, a plurality of bond pads located on the

second attachment surface of the ~~adapter~~ adaptor board having a plurality of bond pads connected to the plurality of circuits in a first bond pad pattern matching the first bond pad pattern of the inverted bare semiconductor die, and having a connector pattern thereon connected to the plurality of circuits matching the connector pattern arrangement of the master board;

providing a plurality of electrical connectors for connecting the connector pattern of the plurality of circuits located on the second attachment surface of the ~~adapter~~ adaptor board to the plurality of circuits of the master board;

attaching a portion of ~~said~~ the inverted bare semiconductor die to a portion of the die side surface of the ~~adapter~~ adaptor board;

connecting ~~said~~ the plurality of bond pads in a first bond pad arrangement of ~~said~~ the bare semiconductor die to ~~said~~ the plurality of bond pads in a matching first bond pad pattern of ~~said~~ the ~~adapter~~ adaptor board using a plurality of bond wires extending through the via extending through the ~~adapter~~ adaptor board from the die side surface to the second attachment surface; and

connecting ~~said~~ the ~~adapter~~ adaptor board and master board using ~~said~~ the plurality of electrical connectors on ~~said~~ the master board to ~~said~~ at least one circuit trace of the plurality of circuit traces on ~~said~~ the master board using ~~adapter~~ adaptor board.

31.-50. (Cancelled)